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## Utilising expertise to manage dynamic urban risks

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**Abstract:** Managing risk is usually multi-dimensional and frequently controversial, since a focus on one element may lead to outcomes that are unpopular with other stakeholders, who may have different agendas, objectives or motivations. This requires that judgements be made, which in many situations require expertise, which is hard won and specific. In some cases, however, the role of experts has been controversial, with other stakeholders challenging the basis on which decisions are made. In other instances management systems or standard operating procedures may hamper discretion. Effective risk management requires that the correct expertise is identified, recruited or developed and sufficiently supported by management practice, including training. It is important, but frequently challenging, to demonstrate that this is undertaken in a reasonable and defensible manner. The paper draws together a number of different concepts and evaluates their impact on the design of robust policy positions that may address the concerns that urban stakeholders may have in developing an appropriate and proportionate response to risks.

**Keywords:** Risk management, dynamic risk, expertise, stakeholders.

### 1. Introduction.

Perhaps the single most defining thing about cities is that they have lot of people in them and there is a lot going on! In other words they are complex places where different groups or individuals pursue an almost infinite number of aims and objectives, and value all sorts of things very differently as a result. Urban life has also facilitated the development of many roles and professions, some of which are concerned with the management of different types of risk. Strategic risk management requires that these different agendas be reconciled and that the most *relevant* expertise be efficiently deployed to make sustainable judgements that people will adhere to. It is not always the case that this happens in practice, and one case that has been widely discussed is the apparent shift in the balance of decision making from public service professionals to health and safety practitioners. This is by no means the only such case that might be examined (others that have been discussed include the border control and immigration policy influence on education (Morgan, 2015; Chandler, 2004), effects of regulation on the financial sector (Nicholls *et al.*, 2011) and environmental laws hindering competitiveness for example (Blind, 2012)). The main common feature is the criticism of the enactment of some policy, initially conceived for logical and well intentioned reasons, but which has either had unintended consequences or extended beyond its original scope. It is this *enactment* of well-intentioned health and safety policies that this paper will examine. The issue that will be examined is the real world fact that trade-offs and judgements need to be made:

Regulators frequently talk about the need to provide ‘proper’ protection, to avoid ‘excessive’ risk aversion and to ‘balance’ benefits and risks. But these terms are undefined, value laden and mean different things to different people (Haythornthwaite, 2006)

This incorporation of values is fundamental to successful risk management. Kates *et al.* (1985) actually incorporated the concept of value in their definition of risk as:

‘an uncertain consequence of an event or an activity with respect to something that humans value’ (Kates *et al.* 1985: 21).

This social definition of risk is helpful in the current context since risk is usually assessed in terms of the probability and severity of the consequences of an event, and these consequences can be positive or negative, depending on the values that people associate with them (IRGC, 2005). It should be remembered that risks are not taken for their own sake but in pursuit of some benefit and the values placed on both risk and benefit are sources of disagreement among stakeholders. Strategic risk management, including the development of policy for urban risk management, needs to address both evidence and values and to reconcile disputes about who should make the decisions.

The main argument developed is that many situations require expertise, which is hard won and context specific. Effective risk management requires that the correct expertise is identified, recruited or developed and sufficiently supported by management practice, including training. It is important, but frequently challenging, to demonstrate that this is undertaken in a reasonable and defensible manner. The paper draws together a number of different concepts and evaluates their impact on the design of robust policy positions that may address the concerns that urban stakeholders may have in developing an appropriate and proportionate response to risks. It builds on the concept, first set out in the early 1980s in the USA (NRC, 1983), that the process of risk management should be separated from the process of risk assessment – i.e. that policy making be separated from evidence gathering, in order to permit the scrutiny of the data against societal values.

## 2. Risk assessment

In the UK the framing legislation for safety, the Health and Safety at Work etc Act 1974, requires that employers do what is ‘reasonably practicable’ to ensure the safety of workers and others. The concept of reasonable practicability is an indication that safety investment decisions need to include a consideration of the economic costs when judging the effectiveness of the proposed intervention. The duty holder has a duty to do what is reasonable but is not required to do everything possible. Several subsequent regulations have required that employers undertake ‘suitable and sufficient’ risk assessments and therefore the requirement for formal, frequently written, risk assessments has proliferated over a number of years driven by the requirement to demonstrate, to regulators and in court, that organisations have acted reasonably. Unsurprisingly a number of risk assessment techniques and safety management systems have been developed, initially in high risk occupational settings but increasingly becoming prevalent elsewhere and this has impacts upon urban environments and the public. Such techniques assess the likelihood and severity of a risk event and facilitate evaluation of the requirement to mitigate the risk against an economic calculation that essentially identifies the sole benefit of an intervention being the increase in safety that can be balanced against the cost of implementing the action – i.e. the test of reasonable practicability. In the UK, organisations with five or more employees are required to provide a written risk assessment of work activities (Management of Health and Safety at Work Regulations, 1999). There is an emerging

concern that such approaches to the management of safety have spread outside their traditional workplace application, including to the management of urban public spaces. Ball and Ball-King (2011) point out that, even where a relatively simple form of risk assessment is utilised for evaluation of risk, some ‘feelings of unease’ may arise because:

...risks in public life are not actually that simple. They are not just about ‘things’ or ‘hazards’, natural or manufactured, as is conceivably more nearly the case in the workplace, but more about interactions between people, objects and environmental conditions. A proper risk assessment of canals and waterways, historic buildings statues in city squares, cobbled streets, shade giving trees, car boot sales and the like, would need to factor in knowledge of people, with all their behaviours, and the weather, notable for its vagaries.

There is clearly a tension between requirements for policies to manage risk proportionately, incorporate stakeholder values where appropriate, be available for scrutiny and another requirement to be able to react to changing circumstances.

Such tensions may be especially acute in the provision of emergency services, such as police, ambulance and fire fighting, where officers sometimes have to work in very dangerous and dynamic operational environments. In addition the general public may *expect* these operators to put themselves at risk to protect others – so the authorities, unions and professional bodies face a considerable challenge in applying the law as it was outlined earlier. As the Chief Fire Officers Association (CFOA, 2013) say for example:

‘We expect firefighters and officers to respond in a professional manner to all emergency incidents. We believe that health and safety regulation and subsequent guidance should be mindful of the unique challenges presented by emergency response and therefore proportionate in their application. Training and operational procedures are vitally important but CFOA does not believe it is possible to risk assess and train for every possible scenario that a firefighter or officer might face. CFOA therefore supports the use of generic risk assessments supported by risk awareness and dynamic assessment along with the safe person concept; right person in the right place, at the right time with appropriate training, equipment and procedures. We recognise that decisions will need to be made in emergency and dynamic situations that with the benefit of a 20/20 hindsight investigation may not bear scrutiny and question’.

The ‘safe person’ concept has two aspects, organisational responsibility and individual responsibility (Ponting, 2008), but is essentially a recognition that risk management needs to rely on expertise at the time that the decision is made and the management of risk needs to be carried out ‘instinctively and continuously during the task itself, rather than being a formal procedure completed before the task begins’ (Tissington and Flin, 2005). This requires that experienced individuals are empowered to make judgements as the situation unfolds. The organisational responsibility is to ensure that the person making the decision has the expertise and that the service can demonstrate a suitable integration into risk management policy covering other aspects such as equipment, training, safe systems of work. Done well, this combination of prior written risk assessment and provision of well-considered approaches to managing risk in dynamic situations, including learning from experience should be sufficient to address the tension outlined above. There are obvious lessons for others who need to deal with volatile situations (lone working, site visits,

inspections etc.) by public employees. Thus it should be possible to avoid loss of important activities and services through risk aversion, perhaps induced by fear of prosecution.

## 2. Expertise.

Having argued that there is a role for expertise in the efficient management of a number of areas of risk, it immediately becomes apparent that it is important to consider the type of expertise required. In the fire fighting example considered above what was being discussed was the ability of experts in fire fighting (or managing fire-grounds) to keep their own staff and the public as safe as reasonably practicable. In a practical sense, they have been given a mandate to do this – and in fact the concept of mandate can be used to determine who is in charge at an emergency, which can be extremely useful in ensuring coherent organisation. Guidance accompanying the Civil Contingencies Act (2004) in the UK (HM Government, 2013), for example, states that the police will normally co-ordinate the activities at and around the scene of a land base emergency. However, a fire and rescue authority would co-ordinate the response at the scene for a major fire at least until the fire has been made safe, at which point the police would ensure the scene is preserved, so as to safeguard evidence.

This concept of mandate is a useful one in the consideration of a number of potentially troublesome aspects of urban risk management, where stakeholder values conflict. Suitable expertise is required to be deployed in development of sustainable solutions that set a level of risk acceptable to different groups. In other papers in this conference we discuss some of the impacts that can happen if a single voice, say, health and safety, becomes too dominant. In the play sector, for example, Ball and Sandseter (2016), evaluate the impact on children if play provision becomes overly risk averse. A revealing discussion, based in part on (Speigal *et al.*, 2014), finds this:

‘ ..... Standards have invaded areas of decision making beyond their legitimate territory with the consequence that play provision has skewed away from what are properly play provision objectives. It is suggested that a consequence has been that local decision makers are often disempowered, with their ability to provide optimal play spaces thereby circumscribed’.

A similar pattern emerged in the discussion of the management of the risk to the public from falling trees (Ball, Watt and Fay, 2016), where a disproportionate emphasis on one aspect of risk management, highway engineering, led to suggested solutions that threatened the achievement of other benefits of urban trees. In both situations, and others such as adventure sports, over enthusiastic pursuit of a risk minimisation agenda, has begun to be countered by recruitment of expertise from within the respective sectors where, arguably, the true expertise resides.

## 3. Relevance of expertise

Clearly at least one dimension of the problem is the identification of expertise that is relevant to the issue (in itself a source of possible contention), along with the associated issue of developing a mechanism for the incorporation of values into the risk decision making. One problem is that expertise itself may have lost credibility, perhaps due in part to the very controversies being addressed. In the UK the field of health and safety came under such sustained public ridicule for excessive ‘nannying’ of the population, that the regulator was forced to make series of statements about what constituted ‘sensible risk management’ (Callaghan, 2006) and introduced a ‘myth of the month’ feature on its website to fight back. Many of the stories that contributed to this attack were in fact rooted in some aspect of public life, such as village fetes,

concerts and classrooms – and these are areas where the general public feels very much at home and therefore willing to dispute any perceived heavy handed safety intervention.

In fact, of course, the public is perfectly correct to believe that it has expertise in such areas. Parents know a lot about bringing up children for example. A current model of expertise developed by psychologists is that an expert is somebody who has spent about 10,000 hours self-consciously developing their expertise. Harry Collins (2014) discusses what he terms ‘ubiquitous expertise’ – acquired without necessarily putting in any self-conscious effort simply by growing up in a particular society (speaking one’s native language is not seen as an expertise by one’s countrymen but clearly is when viewed by a foreigner). Acquisition of such expertise is an achievement which happens to be learnt without much apparent effort. Being a citizen, therefore, can be seen as being somebody that actually knows quite a lot that is relevant to knowing, say, why trees are valuable on a city street, why children need to take risks to learn and grow, and what benefits may be obtained from adventure sports.

There are, however, a number of difficulties. Firstly, as with a lot of expertise, a great deal of the knowledge is tacit – people ‘know’ what should happen but find it hard to express how they know (‘That’s just how it is’). Secondly the situation may actually call for specialist expertise because there are qualities to be assessed that go beyond what a non-specialist would be in a position to achieve. Notice that in no sense should this be expressed as ‘real’ expertise since some types of expertise may change over time from specialist to (near) ubiquitous (Collins, 2014). Driving a car is one example that demonstrated this shift. Specialists are people who, through study and practice, have developed an expertise that is not (yet) common in the general population and who may have important contributions to make in gathering evidence needed to assess or evaluate a risk. Specialists in this sense may be what most people mean when they talk about expertise. A third difficulty, deciding which type of expertise is actually useful may be addressed by another type of expertise identified by Collins (2014) – meta-expertise, used to evaluate and select between other experts.

#### 4. Meta analysis of expertise

One way to examine the role of technical expertise in risk management decision making is to examine some fundamental aspects of the risk itself (IRGC, 2008). Relatively simple risks are those where a lot is known already and, although the risks may be considerable, such as when managing fires, there may be existing regulation, codes of practice and, crucially specialists are available. In such areas the benefits of taking action may be straightforward and uncontroversial. A different approach to risk evaluation and governance may be needed where risks are increasingly complex, uncertain and/or ambiguous (with respect to the perceptions and values associated with the risks). Complexity refers to difficulties in identifying and quantifying causal links between agents and effects (e.g. failures of large interconnected infrastructure). Complex risks require recruitment of a wider range of expertise to develop a ‘risk-informed’ and ‘robustness-focussed’ strategy. If uncertainty is high, there is insufficient clarity or quality of the scientific or technical data (e.g. new technologies, some natural disasters, terrorism). Uncertain risks are better managed using ‘precaution-based’ and ‘resilience-focussed’ strategies. Ambiguity results from divergent or contested perspectives (from different stakeholders, including the public) and the appropriate approach comprises a ‘discourse-based’ strategy which sets out to create tolerance and mutual understanding of conflicting views and values with a view to eventually reconciling them.

It will be clear that the cases under discussion have been selected to focus on the importance of expertise in risk management decision making but that the situations outlined are rather different. In some cases it is



clear that relevant expertise exists and the difficulty is mainly on devising a system where suitable experts may be identified and then supported to get on with their job. It may seem odd to refer to fighting a fire or managing a school trip or to go rock climbing or caving as ‘simple’ but, as set out above, it does seem appropriate to delegate management to an expert. In fact it seems perverse to do otherwise. Care may need to be taken by the responsible organisation (e.g. a school) to ensure that sensible steps have been taken to identify, recruit or develop the appropriate level of specialist expertise and that this process has been adequately recorded so that it may be later scrutinised if something does go wrong. The duty of the responsible organisation is to do what is ‘reasonably practicable’ to ensure safety and the written policy should demonstrate that if required to do so. That does not mean writing detailed procedures for every possible outcome, or hoping that a safety management system approach can replace well founded expert judgement in dynamic situations. The policy will need to address what expertise is needed and who has been selected. For example, Shanteau (1992) defined experts as “those who have been recognized within their profession as having the necessary skills and abilities to perform at the highest level”. Evidence of appropriate qualifications or training may be necessary, where this is possible.

Other cases may be more complex – for example designing activities to address a number of challenges together, such as marrying educational and health benefits of outdoor activities so that children learn to develop self-confidence and improve their own ability to handle risk and danger in the future. Safety is only one component of the calculation and other expertise is required, which may not directly relate to a qualification. So perhaps a more pragmatic identification of expertise might be needed. For example, Kahneman and Klein (2009) used an analogy within the domain of fire-fighting to provide a definition that relates to other levels of expertise in order to identify a person that has greater knowledge and so define an expert in the sense that when colleagues say, “If Person X had been there instead of Person Y, the fire would not have spread so far,” then Person X is an expert in that organization. Both those approaches identify somebody that is better able than a novice to manage the situation and permit a judgement to be made about their role and extent of responsibility. Thus one could see a plan for a school adventure sports trip being a product of the joint effort of experienced teachers allied to qualified instructors or guides at the site. The risk manager therefore has a role in identifying the important components of an issue, especially the different objectives, benefits and agendas being pursued by various parties and seeking the relevant expertise to address gaps in the knowledge required for successful management.

Other urban risk situations can easily be envisaged where there is great uncertainty (and so appropriate expertise is low) or ambiguity (public disagreement about the acceptability or otherwise based on value judgements other than riskiness). Risk managers should thus initiate a broader stakeholder (societal) discourse to enable participative decision making. Development of stakeholder consultation groups such as the Play Safety Forum or the National Tree Safety Group has been immensely useful in focusing debate on the wider issues involved but also in the provision of useful benchmarks against which others can evaluate the reasonableness of their intended actions. Such documents are known to be valued by regulators and the courts and can themselves help to address risk aversion built on apprehension over possible punitive action by engendering a sense of a common approach developed by a like-minded community. Documents such as ‘Common sense risk management of trees’ (NTSG, 2016) and the position statement and guidance documents of the Play Safety Forum (PSF, 2002; 2006; 2012 and 2014), advocate inclusion of benefits other than increased safety in the calculation of the suitability of an intervention.

## 5. Conclusions

Over the last few decades expertise in risk and safety has quite frequently come under attack, whether from the public who are increasingly less intimidated by science, by regulatory regimes that focus on the development of systems rather than judgements or from budgetary constraints. Expertise is, of course, expensive and it certainly does not provide all the answers. Sometimes an over-focus on evidence based approaches has brought its own difficulties and risk management has needed to re-focus on values. On the other hand there are situations where a relativist view that science (or other knowledge) is simply somebody's opinion and that dissenters are entirely justified in their objection because they do not happen to share it, is simply dangerous. An approach to evaluating what expertise is appropriate based on consideration of some important characteristics of different types of risk has been presented. It is important to identify the correct expertise, to deploy it effectively, and to support it with necessary resources.

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